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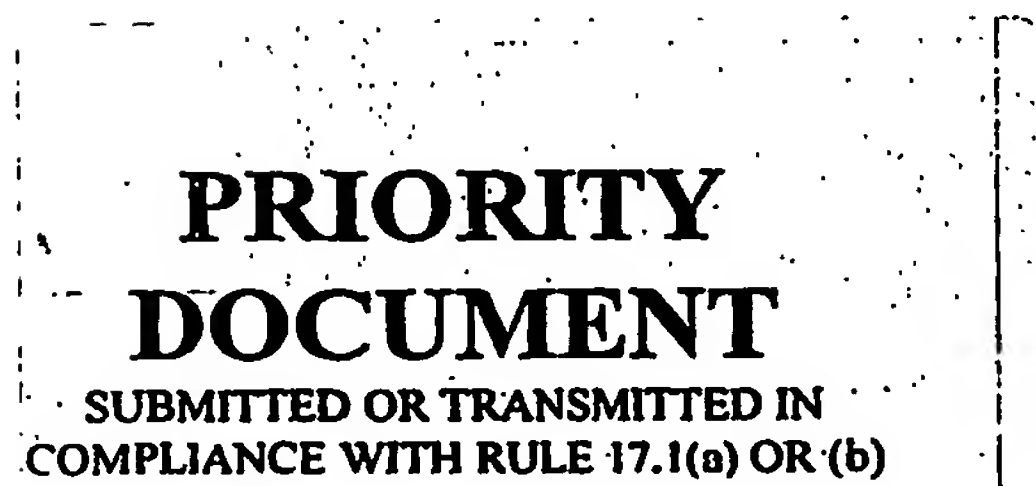
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Patentanmeldung Nr. Patent application No. Demande de brevet n°

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Der Präsident des Europäischen Patentamts;
Im Auftrag

For the President of the European Patent Office

Le Président de l'Office européen des brevets
p.o.

R C van Dijk



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Bezeichnung der Erfindung/Title of the invention/Titre de l'invention:
(Falls die Bezeichnung der Erfindung nicht angegeben ist, siehe Beschreibung.
If no title is shown please refer to the description.
Si aucun titre n'est indiqué se référer à la description.)

Method to decode a data string

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Method to decode a data string

The invention relates to decode data transmitted via US National Weather Service NOAA Weather Radio (NWR) transmitters. Decoding according to the proposed algorithm is very reliable.

Background:

A typical string format is:

ZCZC-ORG-WXR-PSSCCC-PSSCCC+TTTT-JJHHMM-LLLLLLLLL-

where, PSSCCC is the Location data, and TTTT is the Duration data.

- Three signals burst are all captured before decoding, i.e., we have three strings of data.
- Corruption can happens anywhere along the string.
- Usually, if corruption happens at certain location N, all the remaining N+1, +2, +3 ... data are corrupted as well.
- Software considers location data(PSSCCC) and duration data(TTTT) as important data that can have no ambiguity.
- String_1 refers to data collected from 1st burst, String_2 from 2nd burst and String_3 from 3rd burst.

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Software Algorithm:

Stage1:

Purpose: to determine the length of the string, which then helps to pinpoint the location and duration data position.

- 1) Software attempts to locates the "+" data byte in all 3 Strings.
- 2) Comparison of the "+" data byte location among the 3 Strings is done.
- 3) Whichever 2 Strings give the same "+" location (example, String_1's "+" and String_3's "+" both equal 27), we found the String length.
- 4) If none is the same, we revisit each String. We check for the String that could give us "-" at location "+" + 5. (..CCC+TTTT-JJ....)
- 5) If found, the length of string is then determined.

Stage2:

Purpose: to clean up any unwanted data after the last valid data, base on the length of string.

+TTTT-JJJHHMM-LLLLLLLLL-*)< => +TTTT-JJJHHMM-LLLLLLLLL-

- 1) As transmission does not terminate instantly, a few bytes of unwanted data may be recorded.
- 2) These unwanted data are cleaned up.

Stage3:

Purpose: Byte level comparison to check for two same byte of data.

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Example, at location X, String_1 data is "-", String_2 data is "R", Sting_3 data is "R", String_1 data is replace with "R".

- 1) At all location, whichever two string returns the same data that value will be taken as the correct data.
- 2) If all the 3 values are different, proceed to stage 4.

Stage4:

Purpose: to search for the most logical data.

- 1) Base on the string length, we know the exact location of the important data segment.

ZCZC-ORG-WXR-PSSCCC-PSSCCC+TTTT-JJJHHMM-LLLLLLLLL-

- 2) If the disputed data location does not belong to the important segment, we ignore the error.
- 3) If it does belong, we look at all three data. We choose the one that gives a meaningful data.
- 4) By meaningful data, we means, a number (0-9), a minus ("-") or a plus ("+").

ZCZC-ORG-WXR-018097-018101+0015-JJJHHMM-LLLLLLLLL-

- 5) Reconstruction fails if we cannot identify a meaningful data.

- 6) If there is error, we know that software receive an event, but data is too corrupted to be deciphered.
- 7) Error message is pop-up only when strings are received but error occurs in correction.

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What software can handles:

- Three identical strings.
- Two identical strings.
- Corruption at different location of the string.
- Corruption at the same location of the string but at least one of the string returns a meaningful value.
- Corruption at the same location of the string, none returns a meaningful value, but it's not in the important segment.

What software cannot handles:

- Three different strings
- Corruption happens at the same location and none of the string gives a meaningful value and it happens at the important data segment.

What NOAA recommends:

NOAA recommends at least a two byte match.

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Claims

- 1) Method to decode a received data string, comprising the steps of
 - determining the length of said string
 - pinpointing predetermined data positions using said length
 - removing data from said string starting from a position determined by said length.
- 2) Method according to claim 1, further comprising the steps of
 - comparing, byte by byte, different strings assumed to contain identical data
 - taking as correct data those bytes for which said comparison gives the result "identical".
- 3) Method according to claim 2, wherein the comparison is based on more than two strings, and the correct data is determined by majority vote.
- 4) Method according to claim 2 or 3 comprising the further step of
 - searching for the most logical data in case that no correct data can be determined.